

THE GENUS *OCHNA*.

By E. P. PHILLIPS, M.A., D.Sc., F.L.S.

THE National Herbarium has on many occasions received specimens of *Ochna* from the Forest Department for identification, but found that the naming of the species in herbaria was unsatisfactory. Forest officers have suggested that more species are found in the South African forests than those generally accepted as occurring within the Union, and as some of the species are of economic value it was pointed out by the Chief Conservator of Forests that the genus should be critically examined. With the permission of the Chief of the Division of Botany the writer undertook this work. Without the cordial co-operation of the Forest Department this would not have been possible, and my appreciation is here expressed of the willing assistance received from Mr. J. J. Kotze, B.A., B.Sc., the acting Research Officer at the time. To the various forest officers who have supplied specimens and information the writer is also deeply indebted, especially to Mr. A. J. O'Connor, the District Forest Officer at Doornboom, northern Transvaal, who first pointed out the existence of two distinct species of *Ochna* which occur in the Woodbush Forest, and which had previously been regarded as either *O. arborea* or *O. atropurpurea*, var. *natalitia*. My thanks are also due to the Director of the South African Museum, who allowed me facilities for working at the Cape Government Herbarium, and to Dr. S. Schönland, Mrs. F. Bolus, B.A., Mrs. R. Potts, and Dr. P. J. van der Bijl for lending me the material in their respective herbaria, and to the Director of Kew for comparing some specimens with the Kew material.

At first sight the division of the genus into species appeared an easy matter, but as more material was examined the difficulties of limiting the species increased. The writer has critically examined nearly 200 herbarium sheets, but failed to find any constant characters, either floral or vegetative, which could be used as diagnostic characters for a key to the species, and has had to rely on the general "facies" of the specimens in most cases and has found it difficult to express the differences in words. That the specimens have been grouped correctly may be assumed, as handling a large number of specimens makes one familiar with their "look," but whether a particular specimen can be readily placed in its correct species with the aid of the key given here is more doubtful. However, this difficulty will only apply to a few species related to *O. atropurpurea*; the others are fairly distinct.

In the "Flora Capensis" (Vol. I, 448), three species of *Ochna* are described, but my investigations show that there are nine distinct species in South Africa with the possibility of a tenth. This latter is represented by two sheets illustrating a plant with a prostrate habit, but as Harvey, in the "Flora Capensis" under *O. arborea*, mentions that "shoots from the roots occasionally produce flowers," it is just possible that the specimens may represent such shoots, but no information on this point is available. In all the herbarium specimens examined only *O. pulchra* was correctly distinguished, while the limits of *O. arborea* and *O. atropurpurea* were confused. *O. pulchra* is a typical Transvaal species, but also occurs in Rhodesia, and as far as our records go is absent from the Cape Province and Natal. It is readily distinguished from all the other South African species by the large racemose inflorescence. Other distinguishing characters are the entire leaves (or they usually appear entire to the naked eye) and the long stigmas, which are one-third to a quarter the length of the style. The other species which has entire (or apparently so) leaves is *O. arborea*, but this does not occur in the Transvaal. It has been recorded from the George,

Kynsna, Uitenhage, Albany, Stockenstrom, East London, Kingwilliamstown, Komgha, and Kentani Divisions, and then appears in Natal and extends to Lourenco Marques. The inflorescence in this species is also racemose (a very abbreviated raceme), but specimens have passed through my hands in which the flowers are either solitary or 2-4-nate at the apex of short shoots; this is, however, very rare. The third species, *O. atropurpurea*, as I have limited it, is composed of plants of a shrubby habit, 2-3 ft. high, and can usually be recognised at a glance by the branches having a distinct lepidote appearance due to the presence of numerous prominent lenticels; the leaves are usually elliptic, sharply serrated, and the flowers solitary. It has a similar distribution to *O. arborea*, but has also been recorded from Zululand and Barberton. The variety *natalitia* has been kept as a distinct species; it differs from *O. atropurpurea* in habit, and the branches have not the lepidote appearance; the flowers are rarely solitary, and the leaves longer and lanceolate. Though Harvey recognized this variety, he has nevertheless confused it with the species, as in the Cape Government Herbarium there is a sheet (*E. and Z.* 925) labelled on the ticket *O. atropurpurea* and written up as such in Harvey's handwriting, which is undoubtedly *O. natalitia*. This species is not so common in the south-eastern districts as *O. atropurpurea*, but is recorded from several localities in Natal, and then passes through Swaziland to Barberton. Ecklon and Zeyher record it from the Uitenhage Division. The correct limitation of this species has proved the most troublesome, and at first I was inclined to recognize three species. A further examination proved that the first grouping of the specimens was very artificial and that this species should be regarded as a variable one with a wide range of distribution. *O. Chilversii* appears to be confined to the eastern forests, it resembles *O. natalitia* in general habit, but is readily distinguished from this species by the larger number of carpels in the ovary, and the flowers are usually much larger. The two species, *O. O'Connorii* and *O. Holstii*, which occur in the Woodbush Forest are very distinct from all the other South African species. Both are deciduous trees of timber size, and may perhaps be confused in herbaria if leaves are only present, but they differ considerably. *O. Holstii* has a rough bark and ellipsoid fruits, while *O. O'Connorii* has a smooth bark with kidney-shaped fruits. The remaining species, *O. leptoclada*, is found in the Barberton and Lydenberg Districts and also in Rhodesia. Specimens in mature foliage are easily recognized by the oblanceolate leaves, which are long attenuated at the base.

The African species of *Ochna* were monographed by Diels in 1904 (*Engl., "Bot. Jahrb.,"* Vol. XXXIII, p. 232), to which account the reader is referred for a key to all the known African species.

The writer was granted facilities by Mr. Kotze for extracting information about the species from notes sent to the Forest Department by various forest officers.

O. Chilversii. This species is known in the Cwebe Forest by the natives as "sibomvu." The Conservator of Forests, Transkeian Conservancy, remarks: "I was struck with the nice appearance of the wood. It is a soft (hardwood), easy to work. . . . It is plentiful in the Cwebe and other coast forests and approximates *arborea* in size, and could easily be exploited. Possibly it might make an excellent hammer handle." Mr C. C. Robertson remarks on the difference between this species and *O. arborea*. He reported that the "wood, which seems to me far from soft, appears to have the same general character as boxwood, and would probably be suitable for similar purposes," and he suggested that it might be tried for whatever purpose *O. arborea* is used for. The forester at Cwebe, who has handled the wood, describes it as "easy to work and soft."

In the Notinsela Forest the natives know the tree as "umbomvane umncince," and according to Mr. F. M. Fegen the tree occurs both in the Notinsela and Mpimbo Reserves, and appears to be plentiful in the latter locality, and no doubt also in the surrounding forests.

Forester Chilvers mentions that he has only seen one specimen in the Ingeli Forest Reserve. He describes it as a "small tree, stem 5 inches in diameter; bark not smooth as in *O. arborea*; leaves not deciduous."

O. Holstii. This species occurs in the Ingeli Forest Reserve and is also found in the Woodbush Forest in the northern Transvaal. The specimens in the Ingeli Reserve, Forester Chilvers describes as "trees of timber size with deciduous leaves; stem attaining to a diameter of 2 ft. to 2 ft. 6 in. with a rough bark." The species is quite plentiful at Ingeli and is known to the sawyers as the "real red pear" as distinguished from *Scolopia*. Forester Tustin describes this species as "a branched tree 40-50 ft. high, stem 18 in. in diameter, with a bole 15-20 ft. Bark grey on the outside and deep red inside. Flowers in September and October and fruits ripen in December. I have only found the tree growing in denser parts of the forest. It is found throughout my patrols (Impetyne and Ingeli) and is sparingly dotted through the forests. Saplings are numerous compared with old trees. I have not seen this tree used for any purpose."

District Forest Officer A. O'Connor, in submitting specimens from the Woodbush Forest, states it to be "a fairly large deciduous tree. The bark is comparatively smooth, though not with the hard smoothness of *O. O'Connorii*, being more flaky and 'chippy.'" It is beet-red under the surface.

Mr. O. Miller (the acting District Forest Officer at Doornboom at the time) states that the species is fairly abundant in the lower, but scarce in the upper, slopes of the Woodbush Forest. It attains a height of 45 ft., with a trunk diameter, at breast high, of 30 in. The species flowers in November and sets its fruits in January.

O. O'Connorii. This tree has only been recorded from the Woodbush Forest, and was collected by Mr. A. J. O'Connor. He noted the differences between this and *O. arborea*, and describes it as a "small tree with smooth bark, very much like the ordinary Cape plane." The local name is "rooihout," "rooi izerhout."

O. arborea. This species may attain the size of a timber tree or may be only 8-10 ft. high. In the Horseshoe Forest, Kingwilliamstown, Forester Whithal records this species as a "tree 30 ft. high, with a diameter of 26 in. at breast high, and is found on a dolerite formation." At Knysna, Mr. J. D. Keet, the District Forest Officer, records it "as common in all parts of the district, being a small tree which forms part of the under storey of the forest, and rarely reaches a height of 1 ft. at breast high." Locally known as the "rooihout." The wood is very strong and of great durability, and is generally used for making handles of tools and axes. The seeds are said to be attacked by caterpillars. Forester Watton states it to be a plant growing in scrub at Knysna, and is known by the name of "rooihout." Forester Strauch sends the following notes with his specimens: "Very plentiful in all the reserves in this (Alexandria) forestal district, and is found throughout the forest. Average height, 10 ft.; average girth, 4 in. In the kloofs it grows much larger and it is found that the bark is much lighter than in trees growing on ridges or exposed positions. The timber is used for making axe and hammer handles. The tree appears to grow more or less plentifully over the forests in the Alexandria District, which are all on sandy soil."

Sim* is in error when he states that this species occurs in the Transvaal.

O. natalitia. This species, which has been regarded as a variety of *O. atropurpurea*, rightly deserves specific rank. Forester F. M. Fegen reports it as a "small tree about 6 ft. high growing at Notinsela Forest. It is very free in flowering and has scented flowers. I have seen several specimens of this tree in the Mpimbo Forest, but it does not appear to grow higher than 6 or 8 ft. Many young plants of *O. atropurpurea* are growing close to this." Forester Fegen further remarks that both species (*O. natalitia* and *O. atropurpurea*) grow on the edge of the forest and appear to be gregarious, growing thickly together. I have not found them well in the forest. Many stunted plants are in "dobo" grass, and have been scorched by fire and have thrown out branches from the base. This species should make a handsome garden plant, and fruiting specimens are particularly beautiful. The Pondos call it "mbomvane ncinci," but do not appear to use it for any purpose.

* Sim, "Forest Flora," p. 164.

O. atropurpurea. Forester Fegen records this as a "small shrub growing to edge of Maseko Forest and which is very plentiful. It has flowered and fruited very sparingly this year (1915) and fruiting specimens are scarce. The leaves, although identical in shape, are smaller on every specimen than those of *O. natalitia*. It is also found at Notinsela. Galls are nearly always present, and the plants, like *O. natalitia*, are confined to the edge of the forest."*

O. pulchra. A small or large tree, 6-20 ft. high. The trunk is smooth and usually white, which makes the recognition of this tree in the veld easy. It is usually in flower late in September, and at the end of October the sepals take on a red colour which makes the species so conspicuous. The young fruits are then forming, and they mature in December. The flowers are sweetly scented; at first the sepals are bright green, then change to olive-brown and red. The seeds are said to be poisonous.

KEY TO SPECIES.

- Inflorescence in definite long or short racemes, sometimes paniced, very rarely solitary or 2-3-nate at the apices of short shoots, but if so then the leaves entire or appearing entire to the naked eye.
- Ovary of 10-13 carpels..... *Chilversii*.
 - Ovary of less than 10 carpels.
 - Leaves entire or appearing entire to the naked eye (rarely serrated, but if so, then never with prominent lenticels), not acuminate; bark smooth.
 - Racemes 2-12 cm. long..... *pulchra*.
 - Racemes much abbreviated..... *arborea*.
 - Leaves serrated, long acuminate, branches not densely covered with prominent white lenticels; fruit ellipsoid..... *Holstii*.
 - Leaves serrated, shortly acuminate or emcate at the apex, rarely rounded; branches sometimes covered with prominent white lenticels; fruits ellipsoid or kidney-shaped.
 - Fruits kidney-shaped; lenticels not numerous and prominent; a tall tree.
 - Leaves obtuse; Transvaal species..... *O'Connorii*.
 - Leaves acute; Eastern species..... *arborea*.
 - Fruits ellipsoid, lenticels numerous and prominent; a large shrub 6-8 ft. high..... *natalitia*.
- Inflorescence solitary or 2-4-nate arising from the apex of abbreviated shoots.
- Small trees or erect shrubs.
 - Mature leaves up to 9 cm. long, oblanceolate, usually long-attenuate at the base..... *leptoclada*.
 - Mature leaves very rarely up to 8 cm. long, rounded or narrowed at the base, never long-attenuate.
 - Flowers 2-5-nate on much abbreviated shoots from the axils of the leaves..... *natalitia*.
 - Flowers solitary, very rarely 2-5-nate, but then arising from the apex of short shoots and not in the axils of the leaves.
 - Lenticels usually dense and prominent, giving the branches a lepidote appearance to the naked eye; teeth on the margins of the leaves usually triangular in shape, erect, and acute..... *atropurpurea*.
 - Lenticels usually present, but branches not appearing lepidote to the naked eye; teeth on margins of leaves usually incurved.
 - Epidermis flaking from the branches in membranous strips; leaves up to 4 cm. long.. *pretoriensis*.
 - Epidermis rarely evidently flaking in membranous strips; leaves up to 8 cm. long.. *natalitia*.

O. Chilversii Phillips. *Arbor parva. Cortex* sulcata. *Folia*, 3-8 cm. longa, 6-2.5 cm. lata, lanceolata, apice obtusa, basi cuneata, glabra, marginibus serratis. *Inflorescentia* in racemo brevissime disposita. *Ovarium*. 10-13 carpellis.

* Sim, "Forest Flora," p. 164.

A small tree with a trunk 5 in. in diameter. *Bark* rough. *Branchlets* with reddish-brown to almost black bark, pustulate or not, not flaking. *Leaves* 3–8 cm. long, 1.6–2.5 cm. broad, lanceolate, rarely more or less oblanceolate, obtuse, cuneate at the base and passing into a short petiole, rarely rounded, with the midrib distinct above and beneath and the lateral veins evident or not, with serrated margins, glabrous. *Inflorescence* on short shoots in abbreviated racemes, up to 7-flowered. *Pedicels* 1.7–2.2 cm. long, terete, articulated 1–3 mm. from the base, glabrous. *Sepals* 1.4 cm. long, .7 cm. broad, ovate, obtuse, and rounded at the apex; two of the sepals cucullate at the apex, glabrous (in dried specimens the folding of the sepals gives them the appearance of being acuminate). *Petals* 1.7 cm. long, 1.4 cm. broad, obovate, rounded at the apex, narrowed at the base into a short broad claw. *Filaments* 5.5 mm. long; anthers 3 mm. long, linear-oblong in outline, dehiscing by two apical slits. *Ovary* of 10–13 carpels, about 1 mm. long; style 1 cm. long, somewhat compressed; stigmas either capitate or saucer-shaped, with the stigmatic surfaces arranged round the rim. *Fruit* unknown.

EASTERN REGION.—Cwebe Forest, July, *Pretorius in Herb. Forest Dept.* 1625; Notinsela Forest, *Fegen in Herb. Forest Dept.* 1817; Ingeli Forest Reserve, December, *Chilvers in Herb. Forest Dept.* 1945; at mouth of Umkwani River, October, *Tyson*, 2619.

O. pulchra (Hook. fil., Ic. Pl. t. 588).

A small or large tree, 6–20 ft. high. *Branches* usually white or light grey to brown in colour, quite smooth or rough, with the epidermis peeling off in membranous flakes. *Leaves* subsessile, 3.5–11 cm. long, 1.5–5 cm. broad, usually elliptic, sometimes elliptic-lanceolate, rarely oblanceolate, rounded or obtuse at the apex, sometimes mucronate, usually narrowed at the base, more rarely rounded or subcordate; margins entire or appearing entire to the naked eye, more rarely with subulate teeth adpressed to the margins, with the mid-rib prominent beneath and the lateral veins distinct, glabrous. *Inflorescence* a many-flowered raceme, 2–12 cm. long. *Pedicels* 1–2.5 cm. long, glabrous, articulated at the base. *Sepals* 6–8 mm. long, 5 mm. broad, elliptic or suborbicular, obtuse, sometimes with cartilaginous teeth on the margins. *Petals* 7.5–9 mm. long, 4.5–5.5 mm. broad, obovate, narrowed at the base. *Filaments* 2 mm. long; anthers 1.5–2 mm. long, oblong or oblong-linear in outline. *Ovary* of 5–7 carpels; style 2 mm. long; stigmas as many as the carpels, about one-third to a quarter as long as the style, recurved, with faintly bilobed apices. *Fruit* 1.1–1.3 cm. long, 8 mm. in diameter, kidney-shaped, and attached to the torus at the middle.—“*Flora Capensis*,” I, 449.

TRANSVAAL.—Northern Transvaal without precise locality, *Becker in Herb. Albany Mus.*; Pretoria District: Premier Mine, *Rogers* 19846; Magaliesberg, October, *Burke* 302, *Schlechter* 3623; Meintjes Kop, September, *Robertson in Herb. Forest Dept.* 1662; kopjes round Pretoria, September, *Miss Leendertz* 300, 381, May, *Burt-Dary* 2449; Koedoespoort, September, *Miss Stent in Gort. Herb.* 10527; Wonderboom, October, *G.A.Z. in Herb. Forest Dept.* 1686, *Mogg in Herb. Forest Dept.* 1673 and in *Gort. Herb.* 11509, *Galpin* 6977, *Burt-Dary* 2678 and in *Herb. Forest Dept.* 545, *Miss Leendertz* 431. Rustenburg Dist.: Plains at foot of Magaliesberg, *Miss Pegler* 1032; Wolhuterskop, *Howlett in Gort. Herb.* 16176, *Pole Evans in Gort. Herb.* 15843; Silikats Nek, De Kroon, *Putterill in Gort. Herb.* 16176; Rustenburg, *Miss Leendertz* 3369. Waterberg Dist.: Warmbaths, *Burt-Dary* 2626; Leeuwpoot Tin Mines, *Rogers* 19071, 21874; Pietpotgietersrust, *Burt Dary* 2289, *Miss Leendertz* 5635, 2392, *Collector (?) in Herb. Bolus* 10a; Chunies Poort, *Pole Evans* 19460.

RHODESIA.—Veld, Victoria Falls, August–October, *Miss Gibbs* 305; sandy soil, Victoria Falls, 3000 ft., *Rogers*, 5301, 5302, 5423; in open forest, Victoria Falls, 2900 ft., *Galpin* 7050; Livingstone, 3000 ft., October, *Rogers*, 7450; Victoria, *Monro* 1594, 2108.

This species is usually in flower late in September, and at the end of October the sepals take on a red colour which makes the plant so conspicuous. The young fruits are then forming and they mature in December. The flowers are sweetly scented; at first the sepals are bright green, then change to olive-brown and red. The seeds are said to be poisonous.

O. arborea (Burch. ex D.C. Prodr. 1, 736).

A shrub 8 ft. to a tree 30-40 ft. high. *Bark* smooth. *Branches* with light or dark grey bark, with prominent lenticels and with the epidermis often peeling in membranous flakes. *Leaves* subsessile, 1.5-6.5 cm. long, 0.8-3 cm. broad, mostly elliptic more rarely lanceolate-elliptic or obovate, obtuse or rounded at the apex, rarely acute, narrowed or rounded at the base, quite entire or appearing so to the naked eye, very rarely distinctly serrated; teeth when present more or less subulate and adpressed to the margin of the leaf (except *Wood* 5878, in which the serrations are distinct). *Inflorescence* less than 1 cm. long, in a much abbreviated raceme of 3-7 flowers, very rarely solitary or 2-3-nate at the apex of short shoots. *Pedicels* 0.7-1.2 cm. long, articulated about 1 mm. from the base. *Sepals* 6.5 mm. long, 3.5-5 mm. broad, elliptic or ovate-elliptic, rounded at the apex. *Petals* 7.5-1.3 cm. long, 3-5.5 mm. broad, oblong or oblong-obovate, cuneate at the base. *Filaments* 2.5-3 mm. long; anthers 1.5 mm. long, oblong in outline. *Orary* of 4-6 carpels; style 5.5-6 mm. long; stigmas as many as the carpels, or sometimes stigma subglobose. *Fruit* ellipsoid or almost kidney-shaped, attached to the torus at the middle.—“*Flora Capensis*,” I, 449; *Sim*, “*Forest and Forest Flora*,” 163 pl. *xxix*.

George Dist.: George, August, *Rogers* 4039; Woodville Forest, George, *Sim* in *Herb. Forest Dept.* 3116, 3117. Knysna Dist.: Knysna Commonage, *Keet* 498; Christies Kloof, Gouna, near Knysna, *Collector (?)* in *Herb. Forest Dept.* 1342; Gouna River, September, *Keet* in *Herb. Forest Dept.* 2529; Kaffirkop Forest, c. 1500 ft., January, *Watton* in *Herb. Forest Dept.* 2943; De Eiland, *Rabbits* in *Natural Herb.* 1420, 1421. Uitenhage Dist.: Oliphants Hoek and Addo, September-October, *E. and Z.* 924; Zuurberg, *Drège*. Alexandria Dist.: Forests near Alexandria, *Strauch* in *Herb. Forest Dept.* 2012, 3013, 3005. Albany Dist.: Blaauw Krantz Bridge, October, *Galpin* 265; without precise locality, *E. and Z.*; Bothas Hill, December, *Salisbury* 357; Salentown. *Zeyher*; near Grahamstown, *MacOwan* 110. Stockenström Dist.: Kathberg *Mrs. Hobson* 1446. East London Dist.: Coast near East London, April, *Sim* 2153; East London, July, *Miss Gane* 260; near Nahoon River, August, *Galpin* 3291. Kingwilliamstown Dist.: Along the Buffalo River, near Kingwilliamstown, November, *Flanagan* 359; Horseshoe Forest, December, *Whithal* in *Herb. Forest Dept.* 2941; Mkobisa Forest, December, *Van der Merwe* in *Herb. Forest Dept.* 2939; Western Pirie Forest, January, *Kopke* in *Herb. Forest Dept.* 2940. Victoria East Dist.: Auckland Forest, January, *Ackermann* in *Herb. Forest Dept.* 2942. Komgha Dist.: Woods near Prospect Farm, November, *Flanagan* 359. Kentani Dist.: Forest near Kentani, July, *Miss Pegler* 1216. Pondoland, Mpingo Forest, *Fegen* in *Herb. Forest Dept.* 3033, 3089.

Natal: Port Natal, *Guenzius*; Inanda, August, *Wood* 687, and in *Natal Gort. Herb.* 5878; without precise locality, *Gerrard and McKen* 834, and in *Natal Gort. Herb.* 73; Victoria County, *Wood*: Shafton, Howick, *Mrs. Hutton* 153.

Delagoa Bay: *E. and Z.* 926; *Madame Borl* 176, 16; *Rogers* 21373.

A large shrub (*Wood*). A forest tree, 15 ft. high, with masses of yellow flowers (*Miss Pegler*). A small tree throughout the whole of the Knysna Forest; generally used for making handles of tools and axes; wood very strong and heavy and of great durability; seeds attacked by caterpillars (*Herb. Forest Dept.* 1342).

O. O'Connorii, Phillips. *Arbor. Cortex* plana. *Folia* 5-10 cm. longa, 1.3-5 cm. lata, lanceolata, raro elliptica vel ovato-lanceolata, apice paullo angustata, obtusa, *Inflorescentia* in racemo brevissime disposita; flores solitarii vel 2-3-nati. *Fructus* 1.5 cm. long, 8 cm. latus, reniformis.

A tree. *Bark* comparatively smooth, somewhat flaky and “chippy,” beet-red beneath the surface (*O'Connor*). *Branchlets* somewhat pustulate, reddish-brown to dark-brown in colour, not flaking. *Leaves* 5-10 cm. long (usually 6-8 cm. long), 1-3.5 cm. broad, lanceolate, rarely elliptic or ovate-lanceolate, slightly tapering at the apex, rarely acuminate or rounded and retuse, obtuse, sometimes slightly tapering to the base and rounded, with the mid-rib

prominent above and beneath and the lateral veins distinct above; glabrous. *Inflorescence* racemose with the flowers either solitary or 2-3-nate in the raceme. *Pedicels* 1-2.2 cm. long, articulated 1-4 mm. from the base. *Sepals* 7 mm. long, 5 mm. broad, broadly elliptic, rounded at the apex. *Petals* 1.1-1.2 cm. long, 5-6.5 mm. broad, obovate, rounded above, narrowed into a short broad claw at the base. *Filaments* 2.5 mm. long, anthers 2.5 mm. long, linear-oblong in outline. *Ovary* of 5-6 carpels; style 5.5 mm. long; stigmas as many as the carpels. *Fruit* 1.5 cm. long, 0.8 cm. broad, kidney-shaped, attached to the torus at the concave side.

TRANSVAAL.—Barberton Dist.: Van der Merwes Bush, Pilgrims Rest, 5-5750 ft., January, *Burt-Davy* 1409; Barberton, February, *Orange in Colonial Herb.* 1691; *Legat in Colonial Herb.* 1316. Pietersburg Dist.: Woodbush Forest, October, *Grenfell* 3, and in *Colonial Herb.* 1017; *Dwyer*; December-January, *Botha in Herb. Forest Dept.* 2929, 2934; *Legat in Herb. Transvaal Mus.* 9711; by stream at Potatobush, c. 4750 ft., January, *Burt-Davy* 1193; *Eastwood in Colonial Herb.* 1286; Woodbush, 4900 ft. October, *O'Connor in Herb. Forest Dept.* 2198; *Iane-Poole in Herb. Forest Dept.* 547; *Grenfell in Colonial Herb.* 1112; without collector in *Herb. Forest Dept.* 542.

Known as the Cape Plane, Rooihout, Machailo, Rooi Yzerhout, Morelle.

O. Holstii (Engl. in Engl. Pflanzenw. Ostaf. c. 273).

A tree of timber size. *Bark* rough. *Branchlets* varying in colour from light to dark brown, scarcely pustulate, not flaking. *Leaves* deciduous, 5-8 cm. long, 0.8-2 cm. broad, lanceolate, acuminate, obtuse at the apex, narrowed at the base into a short petiole, mid-rib distinct above and beneath, lateral veins not evident, with the margins serrated and with the serrations very erect, glabrous. *Inflorescence* on short shoots in abbreviated racemes, up to 7-flowered. *Pedicels* 1.3-2.7 cm. long, terete, articulated 1-3 mm. from the base. *Sepals* 1 cm. long, lengthening in the fruit, 0.5 cm. broad, elliptic, rounded at the apex, glabrous (in dried specimens the folding of the sepals gives them the appearance of being acuminate). *Petals* 8 mm. long, 5 mm. broad, obovate, rounded at the apex, narrowed at the base into a short broad claw. *Filaments* 5 mm. long; anthers 2 mm. long, oblong in outline, dehiscing by apical slits. *Ovary* of 4-5 carpels about 1 mm. long; style 6 mm. long; stigma globose, faintly lobed. *Fruit* ellipsoid, attached to the torus at one end.

EASTERN REGION.—Tembuland, Engcobo Mtn., *Flanagan* 2696. Natal: Ngomi, *Tustin in Herb. Forest Dept.* 3115; Ingeli Forest Reserve, December-January, *Chilvers in Herb. Forest Dept.* 1944, 1946; *Tustin in Herb. Forest Dept.* 2907, 2984.

TRANSVAAL.—Pietersburg Div.: Woodbush, December, *Botha in Herb. Forest Dept.* 2935; 4900 ft., November, *O'Connor in Herb. Forest Dept.* 2197; without collector in *National Herb.* 1242. Lydenburg Div.: Pilgrims Rest, Van der Merwes Bush, 5400-5750 ft., January, *Burt-Davy* 1408; Drakensberg at Pilgrims Rest, *Collector (?) in Herb. Forest Dept.* 549. Barberton Div.: Barberton, *Rogers* 14996.

This tree flowers in November and sets its fruits in January. The sawyers call it the "real red pear" as distinct from *Scolopia*. In the Woodbush it is known as "rooi yzerhout."

O. natalitia (Engl. et Gilg. in Engl. "Bot. Jahrb.," 33, 236; name only).

Large shrub or small tree. *Branches* usually with prominent lenticels, often numerous but not appearing lepidote to the naked eye. *Leaves* subsessile, 2-9 cm. long, 0.5-2.5 cm. broad, usually lanceolate, more rarely lanceolate-elliptic or lanceolate-linear, cuneate or slightly narrowed at the base, very rarely rounded at the base, obtuse or rounded at the apex, with serrated, very rarely entire margins, with the teeth usually incurved; the mid-rib distinct above and beneath and the lateral vein evident. *Inflorescence* either solitary or 2-nate from the apex of short shoots, or 2-5-nate arising in the axils of the leaves, very rarely in abbreviated racemes. *Pedicels* 0.4-1.5 cm. long, articulated at the base or

1 mm. from the base. *Sepals* 7–8 mm. long, 4·5–5·5 mm. broad, elliptic or rounded at the apex. *Petals* 0·9–1·2 cm. long, 6–7 mm. broad, obovate, narrowed at the base. *Filaments* 1·5–2 mm. long; anthers 1·5–2·5 mm. long, oblong in outline. *Ovary* of 5–9 carpels: style 4·5–6·5 mm. long; stigma either discoid or stigmas as many as the carpels. *Fruit* 0·8–1·4 cm. long, 5–9 mm. in diameter, ellipsoid, more rarely subglobose.—*O. atropurpurea*, var. *natalitia*, “*Flora Capensis*,” I, 448; *Sim*, “*Forest and Forest Flora*,” p. 163.

COAST REGION.—Uitenhage Div.: Uitenhage, May, *E. and Z.* 935; Motinsele Forest, December, *Fegen in Herb. Forest Dept.* 1816, 1818.

EASTERN REGION.—Natal: Berea, 200 ft., August, *Wood* 10060; *Wood in Natal Gort. Herb.* 10062, 10064; without precise locality, *Wood* 6418; near Durban, *Wood* 72; Benvie, Karkloof, 4000–500 ft. *Wylie in Natal Gort. Herb.* 10826; (*Wood* 10034); Umzin-yati, 200–500 ft., October, *Wood* 11458; without precise locality, *Cooper* 1252.

ORANGE FREE STATE: Elandshoek, September, *Rogers in Herb. Transvaal Museum* 2587.

SWAZILAND.—Komassad Valley, Havelock Concession, July, *Galpin* 983.

TRANSVAAL.—Without precise locality, *Miss Stent, in Herb. Transvaal Mus.* 8779. Pietersburg Div.: The Downs, *Rogers* 22133; Tzaneen, *Rogers* 12540. Barberton Div.: Umvoti Creek, near Barberton, 3000 ft., November, *Galpin* 660; *Rogers* 20267; Nelspruit, October, *Breyer in Herb. Transvaal Mus.* 17701; between White River and Nelspruit, *Burt-Ducy* 1510; Carolina, September, *Roberts in Herb. Transvaal Mus.* 15874.

O. leptoclada (Oliv., “*Fl. Trop. Afr.*” I, 318).

A bush, 2–3 ft. high (*Galpin*). *Branches* somewhat pustulate with ash-grey bark and with the epidermis peeling off in membranous flakes. *Young leaves* 2·5–6·5 cm. long, 0·6–1 cm. broad, lanceolate, subacute, tapering at the base, with serrated margins, sometimes subentire. *Mature leaves* 5–11·5 cm. long, 1·4–3·4 cm. broad, mostly oblanceolate, sometimes lanceolate-elliptic, rounded at the apex, usually long-attenuate at the base, more rarely only narrowed, with the mid-rib prominent above and beneath, and the lateral veins distinct, with serrated margins, rarely subentire. *Inflorescence* mostly umbellate on abbreviated shoots, 3–4-flowered, sometimes flowers solitary. *Pedicels* 1–2·5 cm. long, articulated at the very base. *Sepals* 7 mm. long, 5 mm. broad, obovate or elliptic, rounded at the apex. *Petals* 1 cm. long, 5 cm. broad, obovate, rounded at the apex, narrowed into a claw at the base. *Filaments* 3·5 mm. long; anthers 1·5 mm. long, oblong-linear. *Ovary* of 5 carpels: style 4·5 mm. long; stigma capitate. *Fruit* about 6 mm. in diameter, subglobose.

TRANSVAAL.—Barberton Div.: Barberton, November, *Rogers* 18264, and *in Herb. Transvaal Mus.* 15976; mountain sides, Moodies, near Barberton, September–October, 3500 ft. *Galpin* 590; mountains near Barberton, *Bolus* 7693. Lydenburg Div.: Pilgrims Rest, c. 3500 ft., October, *Rogers*, 23068, and *in Herb. Transvaal Mus.* 20541.

RHODESIA.—North-West Rhodesia: Pemba, 3500 ft., October, *Rogers* 8579; Ndola, October, *Allen*, 304; Chilanga, 3500 ft. *Rogers* 8455. Umtali Div.: Odanzi River Valley, *Teague* 399, 497.

BELGIAN CONGO: Elisabethville, 4800 ft., *Rogers* 10194.

O. atropurpurea [L'É. in “*Ann. Mus. Par.*” XVII (1811), 412].

Small shrub, 3–5 ft. high. *Branches* densely covered with prominent lenticels giving them a lepidote appearance to the naked eye. *Leaves* subsessile, 0·8–5 cm. long, 0·4–1·9 cm. broad, usually elliptic, rarely elliptic-ovate, elliptic-oblong, or elliptic-lanceolate, more rarely lanceolate, obtuse, rounded or slightly narrowed at the base, with serrated margins and the teeth usually triangular erect and acute, more rarely incurved, with the mid-rib

prominent above, and lateral veins evident. *Flowers* solitary at the apex of short shoots, very rarely 2-nate. *Pedicels* 1-1.5 cm. long, articulated at the base or about 1 mm. from the base. *Sepals* 6-7 mm. long, 3-6 mm. broad, elliptic, elliptic-ovate or elliptic-oblong, rounded at the apex. *Petals* 0.9-1.3 cm. long, obovate, cuneate at the base. *Filaments* 2-2.75 mm. long; anthers 2-3.5 mm. long, oblong or linear in outline. *Ovary* of 5-6 carpels; style 5-7 mm. long; stigmas as many as the carpels. *Fruit* 7 mm. long, about 5 mm. in diameter, subglobose.—“*Flora Capensis*,” I, 448; *Sim*, “*Forests and Forest Flora*,” p. 163, pl. xxix, fig. 2.

CAPE PROVINCE.—Caledon Div.: Genadendal, 2500 ft., April, *Schlechter* 7749; Bedford, June, *Miss Nicol* 49. Knysna Div.: Woods at Knysna, *Newdigate in Herb. Albany Museum*; *Watton in National Herb.* 1419. Port Elizabeth Div.: Van Stadens, September, *Mrs. Patterson* 737, *MacOwan in Cape Govt. Herb.* Albany Div.: Howisons Poort, near Grahamstown, *MacOwan in Herb. Austro-Afric.* 1766; Rockliffe, near Sidbury, November, *Miss Daly* 771; Grahamstown Commonage, 2000 ft., September, *Schönland* 570; rocky hills near Grahamstown, 2000-2500 ft., August, *Galpin* 48; near Grahamstown, September, *MacOwan* 111; and in *Natal Govt. Herb.* 850; January, *Breyer in Herb. Transvaal Mus.* 16866; Signal Hill, near Grahamstown, 2200 ft., September, *Bolus* 1920. Queenstown Div.: Among rocks on hillside, Junction Farm, Queenstown, 2500 ft., *Miss Wiggill in Herb. Galpin* 8257. East London Div.: East London, December, *Breyer in Herb. Transvaal Mus.* 16544. Komgha Div.: Wood near Prospect Farm, November, *Flanagan* 322. Stockenstrom Div.: In bush at Willisdale, September, *Scully* 77; Kat River, *Bartels*; Katberg Forest, January, *Stapels in Herb. Forest Dept.* 2937, 2938. Stutterheim Div.: Stutterheim, December, *Rogers* 12726; Transkei, Umtata, *Convent School Herb.* 194; Kentani, 1200 ft., October, *Miss Pegler* 194; rocky spots near Bazya, 2000 ft., October, *Baur* 258; Maseko Forest, Negeleni, December, *Fegen in Herb. Forest Dept.* 1819; Pondo-land, Mgazama River, near McAllister's Drift, Port St. Johns, *Miller in Herb. Forest Dept.* 3024.

NATAL.—Near Umkomaas River, October, *Tyson* 2659; Natal Bay, *Gueinzius*; without locality, *Wood* 190.

ZULULAND.—Qudeni Forest, 6000 ft., January, *Davis* 108.

TRANSVAAL.—Barberton Div.: Near Barberton, September, *Bolus*. A small stunted shrub. Plentiful on edge of forest, but does not appear to seed freely (*Fegen*).

Var. *angustifolia*, Phillips. Differs from the type in having smaller, narrower lanceolate leaves.

TRANSVAAL.—Barberton Div.: Margin of wood, upper Moodies, 4500 ft., June, *Galpin* 963, and in *Natal Government Herb.* 8761. Ermelo Div.: Nooitgedacht, December, *Mrs. Pott* 5096, and in *Herb. Transvaal Mus.* 14933. Lydenburg Div.: Between Pilgrims Rest and Sabi, *Rogers* 23410.

SWAZILAND.—Havelock Concession, *Saltmarsh in Herb. Galpin*. A shrub 3 ft. high (*Galpin*).

O. pretoriensis, Phillips (“*Flowering Plant S. Afr.*,” vol. ii).

Branchlets with light to dark-brown bark, peeling in membranous strips, not distinctly pustulate. *Leaves* 1.5-3.8 cm. long, 0.5-1.7 cm. broad, lanceolate, obovate, elliptic, or oblanceolate (mostly oblanceolate), obtuse at the apex, cuneate, more rarely rounded at the base, with serrated margins and with the mid-rib distinct and lateral veins evident. *Flowers* solitary, very rarely 2-nate, arising at the apex of abbreviated shoots. *Pedicels* 1-1.5 cm. long, articulated at the base or 1-2 mm. above the base. *Sepals* 7-8 mm. long, 4-5 mm. broad, ovate or elliptic, rounded at the apex, sometimes 2-3-lobed at the apex, enlarging in fruit. *Petals* 1.5 cm. long, 8.5 mm. broad, obovate, rounded at the apex, narrowed at

the base into a claw. *Filaments* 4·5 mm. long; anthers 2 mm. long, oblong in outline. *Ovary* of 4-5 carpels; style 5 mm. long; stigmas as many as the carpels. *Fruit* 7-8 mm. long, 5-6 mm. broad, more or less ellipsoid.

TRANSVAAL. - Pretoria Div. : Below River Redoubt, Daspoort Rand, October (fruits), *Pole Evans* 157; Pretoria, December (fruits), *Nelson in Herb. Transvaal Mus.* 11709; February (fruits), *Miss Leendertz* 65, and in *Herb. Transvaal Mus.* 4199; November (flowers) *Miss Leendertz* 301; Meintjes Kop, March (fruits), *Pole Evans* 353; Kopje near Gezina, *Phillips in National Herb.* 1422; *Fouche in National Herb.* 1491; Moorddrift, October (fruits), *Leendertz* 2131, and in *Herb. Transvaal Mus.* 7333; Rikatla, October (fruits), *Junod* 147, and in *Herb. Transvaal Mus.* 20146; near Messina, c. 1800 ft., November (fruits), *O'Connor in Herb. Forest Dept.* 1936; Messina, October (fruits), *Rogers* 19398, 20029, 19244, and in *Herb. Transvaal Mus.* 17762.
